

claims 28 and 29 may be found in the specification, page 6, lines 25-30 wherein the proportions of active ingredients in the repellent carrier composition are defined.

(Specifically, these properties are calculated as follows: taking the maximum values, a mixture of 4% by volume citronella oil, 5% by volume rosemary oil and 9% neem oil together with 6% by volume pyrethrum is obtained. Together, these values add up to 24% by volume of the total mixture. The balance of the mixture, 76%, is made up of wax (see specification, sentence bridging pages 6 and 7).)

Claims 1 and 17 were rejected under 35 U.S.C. § 103 as unpatentable over Bordenca (U.S. 3,767,785), and a number of other prior art citations. This rejection is respectfully traversed and reconsideration is requested for the reasons that follow.

In the insect repellent substrate of the present invention, a strip of fabric base material is impregnated with a repellent carrier composition. The carrier composition includes a mixture of wax and an insect repellent. Because the mixture contains such a high proportion of wax (at least 76% by volume -- see claims 28 and 29), the carrier composition solidifies at room temperature. The impregnated fabric base material is adapted to attach to a garment in a manner that will ensure continuous contact of the insect repellent substrate with the wearer's hair or body. This is very significant, because it then enables the wearer's body heat to cause the carrier composition to soften, thus providing a controlled release of the insect repellent from the fabric base material. The controlled release of the active constituents onto the wearer's hair or body provides two significant advantages. First, the controlled and continuous release of active constituents not only kills any existing parasitic insects, particularly lice, but also prevents any further infestation. Second, when the garment is removed, the wax

re-solidifies inhibiting the further release of active constituents. The useful life of the insect repellent substrate is thereby extended, since the active constituents are only released in a controlled and continuous manner when the insect repellent substrate is in continuous contact with the wearer's hair or body. A strip of insect repellent substrate in accordance with the invention has been found to provide effective treatment and prevention of head lice for approximately 6 to 8 weeks (see page 7, lines 17-29).

U.S. 3,767,785 (Bordenca) discloses "insect repellent webs" that can be fabricated into clothing, containers and packages or employed as components thereof, significantly lessening the possibility of insect invasion of the interior of the containers" (see column 1, lines 49-54 and column 3, lines 60-65). The insect repellent compounds employed in the webs of Bordenca are usually liquid (see column 2, lines 3-7) that are either applied to the surface of the material of the webs, or incorporated within the body of the web. Significantly, Bordenca does not disclose mixing wax with the insect repellent compound. More importantly, there is no suggestion that the webs of Bordenca are designed to attach to a garment in a manner that will ensure continuous contact of the web with the wearer's hair or body, so that the wearer's body heat causes the carrier composition to soften and provide a controlled release of the insect repellent compound from the fabric base material. To the contrary, the insect repellent webs of Bordenca are not designed to provide a controlled release of the insect repellent compound. They simply act as a barrier to prevent, or at least significantly lessen, the possibility of insect invasion of the interior of the container that incorporates the web.

U.S. 5,003,635 (Petersen), discloses articles of clothing which include a flexible insect repellent strip carried within an angular cavity fabricated into the article of

clothing. Petersen does not disclose causing the insect repellent strips to be closely disposed next to the skin of the wearer during use. Rather, Petersen's use of the strips in clothing appears to be primarily to prevent ticks, fleas and other such insects from entering the open ends of the article of clothing, such as the legs of trousers, the waist portion of trousers or the neck portion of a shirt. Like Bordenca, Petersen does not disclose mixing the insect repellent compound with wax, nor does he disclose the controlled release of the insect repellent by means of the wearer's body heat causing the carrier composition to soften in use.

The article of Casida discusses the current status (1973) and recent developments in the use of pyrethrum insecticide, which is well know (see paragraph bridging pages 5 and 6 of the present specification). U.S. 4,164,561 (Hautmann) discloses an insect repellent containing perfume which includes citronella oil.

U.S. 5,698,209 (Shono) discloses an "arthropod repellent composition" used in various formulations such as liquid formulations (e.g., lotions, aerosols), etc., by using a suitable carrier (see column 2, lines 4-6). It is the Examiner's contention that Shono shows "these compositions prepared as wax impregnates for use against skin, on fabric substrate". However, the only reference to wax in Shono, is at column 2, line 52, where reference is made to "esters such as bees wax, lanolin, etc.", as a suitable carrier for use in formulating the composition of Shono into a cream. Reference is also made in the same paragraph (see column 2, line 46) to hydrocarbons such as paraffin, liquid paraffin, Vaseline, etc., as suitable carriers used in formulating the composition of Shono into a cream. All of the examples described by Shono in columns 3 and 4 of the specification refer to either aerosols, creams or a lotion. Therefore, Shono clearly does

not consider the situation wherein the carrier composition contains a sufficient proportion of wax such that the carrier composition solidifies at room temperature, as in the present invention.

The composition of Shono is used for repelling arthropods by applying it directly to skin and the like. However, Shono also suggests the possibility of repelling arthropods by covering the exposed part of the skin or clothing with a sheet-like, film-like, net-like or benchmark-like material on which the present composition is supported by a treatment such as caging, impregnation, etc. (see column 3, lines 6-12). However, such a supporting material as described by Shono simply acts as a barrier by covering the exposed part of the skin or clothing. There is no suggestion that the supporting material should be attached to a garment in a manner that will ensure continuous contact of the insect repellent substrate with the wearer's hair or body as in the present invention. Certainly, there is no suggestion that the wearer's body heat be used to soften the carrier composition to provide for a controlled release of the insect repellent from the base material.

U.S. 4,671,960 (Thielen) discloses an herbal repellent composition which uses dry, finely chopped active ingredients held in a receptacle for use in connection with a pet collar. The repellent composition of Thielen is not particularly relevant to the present invention, apart from the fact that he also employs eucalyptus oil and citronella oil.

In the article by Lesser, reference is made to extract of pyrethrum incorporated in ointment composed of various combinations of paraffin, lanolin, tallow and bees wax as an effective repellent. Reference is also made in Lesser to a cream containing

citronella oil, camphor, cedar wood oil, hard paraffin and soft white paraffin. However, in each case it is apparent that the proportion of paraffin and/or bees wax employed is insufficient to cause the carrier composition to solidify at room temperature. This is an essential feature of the present invention, as noted above, which facilitates the controlled release of the insect repellent from the fabric base material during use.

Accordingly, the rejection under 35 U.S.C. § 103 is clearly inappropriate and should be withdrawn.

By this amendment, the rejection of claims 1-27 under 35 U.S.C. § 112, second paragraph, has been obviated by amending the claims to eliminate the language which the Examiner found indefinite.

The rejection of claims 1-27 under 35 U.S.C. § 112, first paragraph, has been obviated by amending claims 1 and 17 to clarify that the repellent is present in a non-toxic amount sufficient to treat and prevent infestations of lice and other parasitic insects on a user.

In view of the foregoing, this application is in condition for immediate allowance.

If the Examiner is of a differing opinion, he is invited to contact Applicant's attorney at the phone number below.

Respectfully submitted,

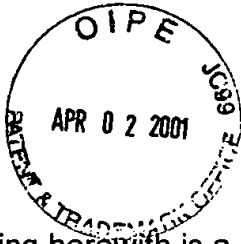
LARSON & TAYLOR, PLC

A handwritten signature in cursive script, appearing to read "Linda R. Poteate".

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ATTACHMENT B

Marked Up Replacement Claims

Following herewith is a marked up copy of each rewritten claim.

1. (Amended) An insect repellent substrate for repelling lice and ~~the like~~ other parasitic insects and for attachment to a garment, the substrate comprising:
a strip of fabric base material impregnated with a repellent carrier composition, the carrier composition being solid at room temperature, and the strip being adapted to attach to the garment in a manner that will ensure continuous contact of the insect repellent substrate with the wearer's hair or body, the carrier composition including a mixture of wax and an insect repellent, the repellent being present in a non-toxic amount sufficient to treat and prevent infestations of lice and other parasitic insects on a user whereby, in use, the wearer's body heat causes the carrier composition to soften to provide a controlled release of the insect repellent from the fabric base material.

6. (Amended) An insect repellent substrate as defined in claim 5, wherein the carrier composition includes citronella oil and rosemary oil, ~~which are also mild insect repellents.~~

17. (Amended) A method of manufacturing an insect repellent substrate for repelling lice and ~~the like~~ other parasitic insects for attachment to a garment, the method comprising ~~the steps of:~~

producing a repellent carrier composition by:

heating a wax to a liquid state; and

mixing an insect repellent with the liquid wax to form a mixture;

dipping a strip of fabric base material into the carrier composition ~~while~~ while still in the liquid state for a sufficient length of time to allow the base material to absorb some of the carrier composition and such that the repellent is present in a non-toxic amount sufficient to treat and prevent infestations of lice and other parasitic insects on a user;

allowing the impregnated strip of base material to cool so that the carrier composition solidifies on the base material to form said insect repellent substrate; and,

attaching the substrate to the garment in a manner that will ensure continuous contact of the insect repellent substrate with the wearer's hair or body whereby, in use, the wearer's body heat causes the carrier composition to soften to provide a controlled release of the insect repellent from the fabric base material.

22. (Amended) A method of manufacturing an insect repellent substrate as defined in claim 21, wherein the scented oils include citronella oil and rosemary oil, ~~which are also mild insect repellents.~~